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10/621,585	07/17/2003	Jae-Young Ahn	5649-1119	2601
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MYERS BIGEL SIBLEY & SAJOVEC PO BOX 37428 RALEIGH, NC 27627			LUND, JEFFRIE ROBERT	
			ART UNIT	PAPER NUMBER
			1763	
DATE MAILED: 11/29/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/621,585

Applicant(s)

AHN ET AL.

Examiner

Jeffrie R. Lund

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 21-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/05</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 16-18 depend from claim 1, which has been cancelled. It is not clear which claim claims 16-18 depend.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 2, 3, 6, 7, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Ryoji et al, US Patent 6,211,622 B1.

Ryoji et al teaches a CVD apparatus that includes: a processing chamber 3; a susceptor for holding a substrate; and a shower head 42 comprising a housing, inlet port supplying Ar gas a spray plate for introducing the gas into the process chamber

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parallel to the substrate, and a coiled wire heating element in the housing connected to a first and second terminal. (Entire document, specifically, Figure 14) The apparatus of Ryoji et al can inherently perform ALD.

5. Claims 12, 16, 17, 25, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Sandhu et al, US Patent 6,499,425 B1.

Sandhu et al teaches a CVD apparatus that includes a processing chamber 201; a susceptor 204 for holding a substrate 206; and a shower head 210 comprising a housing 342, a first inlet port supplying a gas to a first plenum 230, a second inlet port 238 supplying a second gas into a second plenum 228, a spray plate 234, and a wire heating element 222 attached to the second plenum of the showerhead. The first and second plenums are separate, co-planar base portions, and the first plenum has length perpendicular to the co-planar base portion that is greater than a length of the second plenum perpendicular to the co-planar base portions. (Entire documents, specifically, figures 9-12 and column 8 lines 42-67) The apparatus of Sandhu et al can inherently perform ALD.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryoji et al in view of Yamanaka et al, US Patent 6,653,212 B1.

Ryoji et al was discussed above.

Ryoji et al differs from the present invention in that Ryoji et al does not teach that the coiled heating wire is made from tungsten.

Yamanaka et al teaches a coil wire heater 5 made of tungsten. (Figure 1, column 5 lines 12-21)

The motivation for making the wire heater of Ryoji et al out of tungsten is to provide a material of construction as taught by Yamanaka et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the wire heater of Ryoji et al out of tungsten as taught by Yamanaka et al.

9. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryoji et al, 6,211,622 B1.

Ryoji et al was discussed above.

Ryoji et al differs from the present invention in that Ryoji et al does not teach that

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the terminal is elastic and insulates the terminal from the housing.

Ceramic (electrically insulating) spring load (elastic) terminals are well known in the art and commonly used to mount wires for various purposes. Examples of these terminals can be seen in halogen lighting systems.

The motivation for adding a specific terminal means to the apparatus of Ryoji et al is to provide a means for mounting the wire heater as required by Ryoji et al but not described.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the terminal means to the apparatus of Ryoji et al.

10. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryoji et al as applied to claims 2, 3, 6, 7, 12, 16-18, 25, and 26 above, and further in view of Arami et al, US Patent 5,958,140.

Ryoji et al differ from the present invention in that they do not teach that the sidewalls of the showerhead are cooled.

Arami et al teaches a showerhead with cooled sidewalls 47. (Figure 2)

The motivation for adding the cooling means of Arami et al to the apparatus of Ryoji et al is to maintain the showerhead at a specific temperature.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the cooling means of Arami et al to the apparatus of Ryoji et al.

11. Claims 12-14, and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohashi et al, US Patent 6,059,885, in view of Ryoji et al, US Patent

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6,211,622 B1.

Ohashi et al teaches a CVD apparatus that includes: a processing chamber; a susceptor 12 holding a substrate W; and a showerhead having a first plenum Sz receiving a first gas via inlet 19, a second plenum Sx receiving a second gas via inlet 16, a spray plate 17, and a partition plate 18, which separates the plenums along a continuous plane. The plenums share the spray plate 17 and the base portions of the plenums are co-planar. (Figure 4)

Ohashi et al differs from the present invention in that Ohashi et al does not a gas heater in the first plenum or that the length of the first plenum perpendicular to the co-planar base is longer than the length of the second plenum perpendicular to the co-planar base.

Ryoji et al, as discussed above, teaches a gas source with a gas heater in a plenum of a showerhead.

The motivation for replacing the gas inlet of Ohashi et al with the gas source of Ryoji et al is to provide a source of gas that is heated and ionized as taught by Ryoji et al.

Alternately, the motivation for adding the heating element of Ryoji et al to the plenum of Ohashi et al is to heat the gas as it enters the plenum, and it would be obvious to optimize the shape of the plenum to optimize the gas flow and temperature distribution of the gas. It has been held that a change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious. (See *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) MPEP 2144.04(d))

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Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the ionized gas source of Ryoji et al to the apparatus of Ohashi et al, or alternately, add the gas heater of Ryoji et al and to optimize the shape of the plenum.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohashi et al and Ryoji et al as applied to claims 12-14, and 21-27 above, and further in view of Arami et al, US Patent 5,958,140.

Ohashi et al and Ryoji et al differ from the present invention in that they do not teach that the sidewalls of the showerhead are cooled.

Arami et al teaches a showerhead with cooled sidewalls 47. (Figure 2)

The motivation for adding the cooling means of Arami et al to the apparatus of Ohashi et al and Ryoji et al is to maintain the showerhead at a specific temperature.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the cooling means of Arami et al to the apparatus of Ohashi et al and Ryoji et al.

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohashi et al and Ryoji et al as applied to claims 12-14, and 21-27 above, and further in view of Asano et al, US Patent 6,863,732 B2.

Ohashi et al and Ryoji et al differ from the present invention in that they do not teach a boat supporting a plurality of substrates.

Asano et al teaches a coating device 1 using a showerhead 31c and supporting the substrates W on a boat 4. (Figure 2)



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The motivation for adding the boat of Asano et al to the apparatus of Ohashi et al and Ryoji et al is to enable the apparatus of Ohashi et al and Ryoji et al to process a plurality of substrates in a single batch thus improving throughput.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the boat of Asano et al to the apparatus of Ohashi et al and Ryoji et al.

14. Claims 14, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohashi et al, US Patent 6,059,885, in view of Sandhu et al, US Patent 6,499,425 B1.

Ohashi et al teaches a CVD apparatus that includes: a processing chamber; a susceptor 712 holding a substrate 711; and a showerhead having a first plenum S receiving a first gas, and a second plenum 719 receiving a second gas. The first plenum extends further from the process chamber than the second plenum. (Figure 7)

Ohashi et al differs from the present invention in that Ohashi et al does not a gas heater in the first plenum.

Sandhu et al, as discussed above, teaches a gas heater in a first plenum of a showerhead.

The motivation for adding the gas heater of Sandhu et al to the apparatus of Ohashi et al is to heat and partially ionize the gas prior to its entry into the processing chamber as taught by Sandhu et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas heater of Sandhu et al to the apparatus of

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Ohashi et al.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohashi et al and Sandhu et al as applied to claims 14, 16, and 17 above, and further in view of Arami et al, US Patent 5,958,140.

Ohashi et al and Sandhu et al differ from the present invention in that they do not teach that the sidewalls of the showerhead are cooled.

Arami et al teaches a showerhead with cooled sidewalls 47. (Figure 2)

The motivation for adding the cooling means of Arami et al to the apparatus of Ohashi et al and Sandhu et al is to maintain the showerhead at a specific temperature.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the cooling means of Arami et al to the apparatus of Ohashi et al and Sandhu et al.

16. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohashi et al and Sandhu et al as applied to claims 14, 16, and 17 above, and further in view of Asano et al, US Patent 6,863,732 B2.

Ohashi et al and Sandhu et al differ from the present invention in that they do not teach a boat supporting a plurality of substrates.

Asano et al teaches a coating device 1 using a showerhead 31c and supporting the substrates W on a boat 4. (Figure 2)

The motivation for adding the boat of Asano et al to the apparatus of Ohashi et al and Sandhu et al is to enable the apparatus of Ohashi et al and Sandhu et al to process a plurality of substrates in a single batch thus improving throughput.

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Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the boat of Asano et al to the apparatus of Ohashi et al and Sandhu et al.

17. Claims 2, 3, 6, 7, 12, 16-18, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al, US Patent 6,352,594 B2, in view of Sandhu et al, US Patent 6,499,425 B1.

Cook et al teaches a CVD apparatus that includes: a processing chamber 42; a wafer boat 40 holding a plurality substrates 56; a showerhead 78 configured to spray the reaction gas parallel to the substrates, having a housing 80 with a first plenum 88 receiving a first gas via an inlet port 84, a second plenum 90 receiving a second gas via an inlet port 86, a spray plate 94, and a cooling channel. (Figure 7)

Cook et al differs from the present invention in that Cook et al does not a coiled wire gas heater in the first plenum and connected to a terminal.

Sandhu et al, as discussed above, teaches a gas heater in a first plenum of a showerhead.

The motivation for adding the gas heater of Sandhu et al to the apparatus of Cook et al is to heat and partially ionize the gas prior to its entry into the processing chamber as taught by Sandhu et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas heater of Sandhu et al to the apparatus of Cook et al.

18. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over

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Cook et al and Sandhu et al as applied to claims 2, 3, 6, 7, 12, 16-18, 25, and 26 above, and further in view of Yamanaka et al, US Patent 6,653,212 B1.

Cook et al and Sandhu et al differ from the present invention in that they do not teach that the coiled heating wire is made from tungsten.

Yamanaka et al teaches a coil wire heater 5 made of tungsten. (Figure 1, column 5 lines 12-21)

The motivation for making the wire heater of Cook et al and Sandhu et al out of tungsten is to provide a material of construction as taught by Yamanaka et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the wire heater of Cook et al and Sandhu et al out of tungsten as taught by Yamanaka et al.

19. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al and Sandhu et al.

Cook et al and Sandhu et al differ from the present invention in that they do not teach that the terminal is elastic and insulates the terminal from the housing.

Ceramic (electrically insulating) spring load (elastic) terminals are well known in the art and commonly used to mount wires for various purposes. Examples of these terminals can be seen in halogen lighting systems.

The motivation for adding a specific terminal means to the apparatus of Cook et al and Sandhu et al is to provide a means for mounting the wire heater as required by Cook et al and Sandhu et al but not described.

Therefore it would have been obvious to one of ordinary skill in the art at the time

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the invention was made to add the terminal means of '234 to the apparatus of Cook et al and Sandhu et al.

20. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al and Sandhu et al as applied to claims 2, 3, 6, 7, 12, 16-18, 25, and 26 above, and further in view of Arami et al, US Patent 5,958,140.

Cook et al and Sandhu et al differ from the present invention in that they do not teach that the sidewalls of the showerhead are cooled.

Arami et al teaches a showerhead with cooled sidewalls 47. (Figure 2)

The motivation for adding the cooling means of Arami et al to the apparatus of Cook et al and Sandhu et al is to maintain the showerhead at a specific temperature.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the cooling means of Arami et al to the apparatus of Cook et al and Sandhu et al.

21. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al, Sandhu et al, and Arami et al as applied to claims 2, 3, 6, 7, 12, 16-18, 25, and 26 above, and further in view of Ohashi et al, US Patent 6,059,885.

Cook et al, Sandhu et al, and Arami et al differ from the present invention in that they do not teach that the first plenum extends further from the processing chamber than the second plenum.

Ohashi et al was discussed above and includes a first plenum S extends further from the processing chamber than the second plenum 719.

The motivation for adding the motivation for elongating the first plenum in the

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apparatus of Cook et al, Sandhu et al, and Arami et al is to provide a specific shape for the plenums as taught by Ohashi et al. Furthermore, it has been held that a change in shape is a matter of choice which a person of ordinary skill in the art would have found obvious. (See *In re Dailey*, 357 F.2d 669,149 USPQ 47 (CCPA 1966) MPEP

2144.04(d))

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to elongate the first plenum of Cook et al, Sandhu et al, and Arami et al as taught by Ohashi et al.

### ***Response to Arguments***

22. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

23. Applicant's arguments filed September 15, 2005 have been fully considered but they are not persuasive.

In regard to the argument that there is "no motivation to modify the apparatus of Cook to include the gas heater of Sandhu, and that cool actually teaches away from such a modification", the Examiner disagrees. First, the motivation for adding the heater of Sandhu et al to the apparatus of Cook et al is to preheat the gas prior to its injection into the chamber thus shortening the time the wafers are exposed to the high temperatures of the processing chamber. Second, while it is true that Cook et al teaches cooling the injector, this does not amount to a teaching that the gas should not be heated. It is common to heat the gas prior to its entry into the chamber to prevent it from condensing and to raise the temperature of the gas to near the dissociation

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temperature, and to cool the injector. This is done to maintain the temperature of the gas in the proper temperature range. If a gas is too cool it can condense or cause thermal shock to the substrate, and if the gas is too hot it can dissociate and deposit on the injector causing damage to the injector. The injector of Cook et al is cooled to prevent the premature deposition, and thus does not prevent the gas from being heated. The Examiner further notes that the present invention also has a cooling means to cool the walls of showerhead, which also cools the injector.

In regard to the argument that "With respect to Sandhu, to the extent that sub-conduits 228 and passageway 230 are interpreted as first and second plenums as set forth in the Office Action, these elements of Sandhu fail to teach or suggest first and second plenums defining respective first and second separated cavities. The passageway 230 and the sub-conduits 228 of Sandhu fails to teach or suggest separated cavities because the sub-conduits 228 are included in the passageway 230", the Examiner disagrees. The gases in the sub-conduits 228 and the gases in the passageway 230 are delivered to the processing chamber without mixing. Therefore, the chambers are separate. The Examiner notes that the present invention includes a first cavity 212 inside the second cavity 214 (see figure 10).

In regard to the argument that "there is no motivation to somehow selectively combine aspects of the CVD apparatus providing gas flow parallel with respect to processed wafers of Cook with the plasma processing apparatus providing gas flow perpendicular with respect to the processed wafers of Sandhu", the Examiner disagrees. A common problem addressed in both patents includes how to introduce

processing gases into the chamber. Both patents are directed to CVD, and more specifically, both patents discuss the use of plasma in the CVD process. Sandhu et al is directed to a remote form of plasma enhanced CVD, that can be applied in any showerhead to improve the CVD process by heating and partially ionizing the precursor gases prior to their entry into the processing chamber, thus preventing damage from ion bombardment to the wafer. The direction of the flow of gases is moot because the combination is inside the showerhead, and thus is of no effect on how the showerhead is aligned i.e. perpendicular or parallel with the wafers. One of ordinary skill in the art reading Sandhu et al would understand that the heaters could be applied to any showerhead and be led to apply the teachings to any showerhead regardless of alignment.

In regard to the argument that "nothing in either Ohashi or Sandhu teaches or suggests a heating element located in an extended portion of a plenum", the examiner disagrees. At a minimum, Ohashi et al teaches a showerhead with two plenums, the first plenum S is directly over the wafer, the second plenum 719 is concentric with the substrate and first plenum. The first plenum includes an extended portion such that the first plenum extends further from the process chamber than the second plenum (see figure 7). One of ordinary skill reading Sandhu et al and seeking to implement the improvements suggested by Sandhu et al would be led to, at a minimum, replace the plenum directly over the substrate with the improved showerhead of Sandhu et al. Thus the motivation for the combination is found in Sandhu et al and the knowledge generally available to one of ordinary skill in the art.



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***Conclusion***

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art teaches the technological background of the invention.

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-

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273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrie R. Lund  
Primary Examiner  
Art Unit 1763

JRL  
11/24/05